

CLAIMS

1. A body fluid aspiration and injection syringe for UV-irradiation treatment or hematogeneous oxidation therapy of body fluids outside the body, said syringe comprising:

- a) a cylinder having a converging distal end forming a first closeable inserting tip adapted for receiving body fluids aspirated through said first inserting tip;
- b) a piston rod structure which is essentially cross-shaped extending in this form essentially over the full axial length of said cylinder, said piston rod structure having a longitudinal bore extending through the center portion of said piston rod structure from, a second inserting tip adapted to be closed at the proximal end thereof, to a check valve at the distal end thereof;
- c) said piston rod structure comprising a locking device for locking said piston rod structure in said cylinder, said locking device being arranged at positions in said piston rod structure that correspond to various syringe fill volumes;
- d) a cap seal structure permanently fixed to said distal end of said piston rod structure, said cap seal structure being provided with holes leading from the interior of said cylinder to an interior space defined between said cap seal structure and said check valve at the distal end of said longitudinal bore;

e) said syringe being utilized for creating a vacuum in said cylinder such that, after said first and second inserting tips at the proximal and the distal ends being closed, said piston rod structure is pulled out of said cylinder up to a locking position and locked therein in order to use said vacuum for aspiration of blood after said first inserting tip at the distal end being opened.

2. The body fluid aspiration and injection syringe of claim 1, further comprising a locking disk for placement on a retaining flange of said cylinder, said locking disc having a U-shaped inner recess for receiving said retaining flange and legs that fit into corresponding recesses in said piston rod structure such that rotating said piston rod structure causes said recesses of said piston rod structure to engage said legs and to lock said piston rod structure in a locking position.

3. The body fluid aspiration and injection syringe of claim 1, wherein said holes in said cap seal structure are largest at a distance closest to walls of said cylinder and decrease in size toward the center of the cylinder.

4. The body fluid aspiration and injection syringe of claim 2, wherein said recesses are arranged at locations in said piston rod structure that correspond to syringe fill volumes from about 1 ml to about 120 ml.

5. The body fluid aspiration and injection syringe of claim 1, wherein said distal end of said longitudinal bore is adapted to be connected to an oxygen source such that oxygen is supplied to the interior of said syringe by passing through said check valve and said holes in said cap seal structure in order to introduce oxygen into blood by foaming oxygen therein.

6. The body fluid aspiration and injection syringe of claim 1, wherein said piston rod structure includes at least one cut-out in opposite web areas of said piston rod structure, wherein an insertion pin is insertable into said at least one cut-out when said piston rod structure is pulled out of the cylinder such that said insertion pin engages the retaining flange and thereby locks said piston rod structure in its pulled-out position.

7. The body fluid aspiration and injection syringe of claim 6, wherein the at least one cut-out is arranged at locations in said piston rod structure that correspond to syringe fill volumes from about 1 ml to about 120 ml.

8. The body fluid aspiration and injection syringe of claim 1, wherein said essentially cross-shaped piston rod structure includes at least one web having at least one corresponding short web-like elastic locking arm extending parallel to an adjacent web, said at least one elastic locking arm extending outwardly and having at least part of an outer edge extending to an outer plane of said at least one web such that during insertion of the piston rod structure, said at least one locking arm is movable into the interior of the syringe by sideward flexing and that said at least one locking arm springs back out to extend over the retaining flange when the piston rod structure is moved out of said syringe.

9. The body fluid aspiration and injection syringe of claim 8, wherein the insertion tip of the cylinder and said bore at said distal end of said piston rod structure are closed and said piston rod structure is pulled out of the cylinder up to said locking position to create a vacuum in said syringe.

10. The body fluid aspiration and injection syringe of claim 9, wherein said distal end of said longitudinal bore is adapted to be connected to an oxygen source such that oxygen is supplied to the interior of said syringe by passing through said check valve and said holes in said cap seal structure in order to introduce oxygen into blood by foaming oxygen therein.